THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN M. LEGARE and ANESTIS L. LOGOTHETIS

Appeal No. 95-3985
Application No. 08/016,644[1]

ON BRIEF

Before KIMLIN, OWENS and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed February 12, 1993. This application is a continuation-in-part of Application No. 07/747,318 filed August 20, 1991, now abandoned; which is a continuation-in-part of Application No. 07/347,329 filed April 24, 1989, now abandoned.

This is a decision on an appeal from the final rejection of claims 1 to 17 which are all the claims in the application.

THE INVENTION

Appellants' invention is drawn to a process of fluorinating a fluoroelastomer which had been previously crosslinked by exposure to radiation. Fluorination occurs at a temperature of
-50°C to about 200°C and at a partial pressure of about 25 kPa to about 5.0 MPa. The purpose of the invention is to improve the stability of fluoroelastomers by destroying the presence of unstable groups within the crosslinked fluoroelastomer. The absence of unstable groups results in the reduction of corrosive outgassing. Claim 1 is illustrative and read as follows.

1. A process for reducing the outgassing of a crosslinked perfluoroelastomer, comprising, contacting, at a temperature of about -50°C to about 200°C, fluorine at a partial pressure of about 25 kPa to about 5.0 MPa, and a perfluoroelastomer which has been crosslinked by exposure to radiation.

THE REFERENCES

Three new references cited herein were relied upon by the examiner for the first time in the Supplemental Examiner's Answer. The references of record are:[2]

Bowers III (Bowers)	3,116,226	Dec. 31, 1963
Brizzolara et al. (Brizzolara)	3,682,872	Aug. 8, 1972
Apotheker et al. (Apotheker)	4,035,565	Jul. 12, 1977
Lagow et al. (Lagow)	4,621,107	Nov. 4, 1986
Imbalzano et al. (Imbalzano)	4,743,658	May 10, 1988
Nakahara et al. (Nakahara)	4,948,844	Aug. 14, 1990
Logothetis	4,972,038	Nov. 20, 1990

THE REJECTIONS

The rejections of record are as follows[3].

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[2] The references of record cited by the examiner improperly excluded a reference to Lagow, relied upon by the examiner in the rejection of claim 11. It is cited herein to correct the record.

[3] At the outset the record is unclear as to which of the rejected claims correspond with each set of references. The examiner in the second Final Office Action, Paper No. 9, dated

(continued...)

Claims 1-5, 7-9, 12 and 14-16 are rejected under 35 U.S.C. § 103(a) as unpatentable over Imbalzano in view of Bowers.

Claims 1-5, 7-9 and 12-16 are rejected under 35 U.S.C.

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[3](...continued)
August 16, 1994, rejected claims 1-9, 12 and 14-17 under 35 U.S.C. § 103(a) as unpatentable over Imbalzano in view of Bowers and further rejected claims 1-10, 13 and 15-17 under 35 U.S.C.
§ 103(a) as unpatentable over Nakahara in view of Bowers. The Examiner's Answer additionally included claim 10 in the rejection of Imbalzano in view of Bowers. Similarly, the Brief, on page 4, line 3, incorrectly included claims 4-17 in the same rejection. Presumably, this is a typographical error. Appellants, clearly intended to state claims, "14-17." Likewise, the Examiner's Answer additionally included claims 12 and 14 in the rejection of Nakahara in view of Bowers. The rejected claims were further modified by the examiner in the Supplemental Examiner's Answer, at page 3, wherein the rejections of claims 6, 10 and 17 were withdrawn, and three new grounds of rejection were added for said claims 6, 10 and 17. The rejection of claim 12 as unpatentable over Imbalzano in view of Bowers was omitted by the examiner in the Supplemental Examiner's Answer, the record being silent as to its omission.

As there is no comment by the examiner on the record, and no objection by appellants in their Appeal Brief, Reply Brief and Reply To Supplemental Answer and to the New Ground Of Rejection to the inclusion of these additional claims in the rejections previously made of record by the examiner, we shall consider the rejections of these claims to have been included in the claimed subject matter before us for decision. Accordingly, the rejection over Imbalzano in view of Bowers is construed to include claim 12. Likewise the rejection over Nakahara in view of Bowers is construed to include claims 12 and 14.

§ 103(a) as unpatentable over Nakahara in view of Bowers.

Claim 11 is rejected under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara with Bowers in view of Lagow (4,621,107).

The examiner, in the Supplemental Examiner's Answer, added three additional grounds of rejection which are as follows.

Claims 6, 10 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Logothetis (4,972,038).

Claims 6, 10 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Brizzolara (3,682,872).

Claims 6, 10 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Apotheker (4,035,565).

OPINION

At the outset, examiner and appellants have agreed upon grouping of the claims into three separate and distinct groups. In contrast to their position, our decision is based

upon issues which in our analysis are common to and shared by each of the rejections before us. We will therefore substantially confine our discussion to claim 1.

Our decision is based upon the examiner's reliance on the teachings of Bowers. Claim 1 requires that the starting material of the process be a fluoroelastomer which has been crosslinked by exposure to radiation. Bowers teaches the irradiation crosslinking of a fluorocarbon copolymer of tetrafluoroethylene and fluoroolefins. The examiner asserts that crosslinking of a fluorocarbon copolymer as taught by Bowers is applicable to fluoropolymers in general. Hence, it would have been obvious to the person having ordinary skill in the art to crosslink the polymer of the primary references of Imbalzano or Nakahara using irradiation as taught by Bowers, Brief p. 4 and 5, to provide the starting material of claim 1.

We find the disclosure of Bowers inadequate and insufficient for the reasons infra to support a rejection of claim 1. Hence we will not sustain any of the above six rejections.

The examiner, in the rejection of claim 1, suggests that it would have been obvious to one of ordinary skill in the art

at the time the invention was made to crosslink the fluoroelastomers employed as, "[O]ne would have been motivated by a reasonable expectation of success because of the homologous nature of the fluoroelastomers taught by each reference," Final Office Action, Paper No. 9, page 3, lines 3-5. We disagree with the examiner's contention, that fluorocarbon copolymers in general, could be expected to crosslink upon irradiation because of their homologous nature.

In contrast to the examiner's statement, Bowers distinctly teaches that fluoropolymers do not act in a homologous manner. Bowers discloses in column 1, lines 32-38, that fluoro-carbons are known to degrade when subjected to high energy ionizing radiation.

In fact, Bowers discloses that only a limited class of fluorocarbon copolymers prepared from tetrafluoroethylene and fluoroolefins defined by the structure $CF_2=CXC_nF_{2n}Y$ and the cyclic perfluoroolefins taught in column 2, lines 3-5, become crosslinked when subjected to ionizing radiation, column 2, lines 1-21. The uniqueness of this class of fluorocarbon polymers is seen in contrast to other fluoropolymers which may either degrade or become crosslinked upon irradiation, Bowers,

id. Hence, there is no teaching in Bowers that enables one to generalize from irradiation of his copolymers to fluoropolymers in general. The examiner's contention that fluoropolymers are homologous is not supported.

Moreover, patentee's statement that either degradation or crosslinking may be obtained is supported by a teaching in Table VI, bridging columns 7 and 8, that polytetra-fluoroethylene and polyhexafluoro-propylene both degrade when subjected to high energy ionizing radiation at temperatures in excess of their glass transition temperature[4], the former having a decreased melt viscosity and the latter a substantially lowered inherent viscosity. Accordingly, we find that the person having ordinary skill in the art following the teachings of Bowers with respect to irradiation at temperatures in excess of the glass transition temperature would not have known whether the fluoropolymers would have degraded or crosslinked.

Finally, the examiner's assertion that, "[A]ppellants' claims encompass fluoropolymers containing terminally

[4] Polymer Handbook, J Brandrup et al., III-64 to III-65, Interrscience Publishers, New York, 1966.

unsaturated perfluoroolefins," Answer, page 8, lines 8-10, is on its face correct. The issue, however, is not whether claim 1 encompasses the copolymer of Bowers, but whether the person having ordinary skill in the art would have combined the teachings of the Bowers reference with either of the primary references to Imbalzano or Nakahara to obtain, the starting material of claim 1, a crosslinked perfluoroelastomer. Neither of these references teach a copolymer of tetrafluoroethylene with substituted, terminally unsaturated perfluoroolefins or omega hydroperfluoroolefins as required by Bowers. Indeed, each teaches a copolymer of tetrafluoroethylene with partially or fully fluorinated alkyl vinyl ether. As we discussed supra, based on the teachings of Bowers there would have been no expectation that irradiation of the copolymers of either Imbalzano or Nakahara would result in a crosslinked elastomer as opposed to a degraded copolymer. Hence, there is no reason why the person having ordinary skill in the art would have followed the teachings of Bowers and irradiated a perfluoro tetra-fluoroethylene-alkyl vinyl ether copolymer.

Accordingly, the decision of the examiner is reversed.

DECISION

The rejection of claims 1-5, 7-9, 12 and 14-16 under 35 U.S.C. § 103(a) as unpatentable over Imbalzano in view of Bowers is reversed.

The rejection of claims 1-5, 7-9 and 12-16 under 35 U.S.C. § 103(a) as unpatentable over Nakahara in view of Bowers is reversed.

The rejection of claim 11 under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara with Bowers in view of Lagow (4,621,107) is reversed.

The rejection of claims 6, 10 and 17 under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Logothetis is reversed.

The rejection of claims 6, 10 and 17 under 35 U.S.C. § 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Brizzolara is reversed.

The rejection of claims 6, 10 and 17 under 35 U.S.C.

§ 103(a) as unpatentable over Imbalzano or Nakahara in combination with Bowers and further in view of Apotheker is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)	
TERRY J. OWENS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PAUL LIEBERMAN Administrative Patent Judge	)	

bae

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